

POOR LEGIBILITY

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***** CONFIDENTIAL *****
***** PREDECISIONAL DOCUMENT *****SUMMARY SCORESHEET
FOR COMPUTING PROJECTED HRS SCORESITE NAME: FLYNN-LEARNER PROPERTYCITY, COUNTY: HONOLULU, HONOLULUEPA ID #: HID984468363EVALUATOR: S. MACKENZIE

PROGRAM ACCOUNT #:

DATE: SEPTEMBER 1994Lat/ Long: 21°19'37.294" / 157°53'36.310"T/R/S: N/A

THIS SCORESHEET IS FOR A:

PA SI XOther (Specify)

RCRA STATUS (check all that apply):

 Generator X Small Quantity Generator Transporter TSDf Not Listed in RCRA Database as of (date of printout) / /

STATE SUPERFUND STATUS:

 DTSC Annual Work Plan (formerly BEP) (date) / / WQARF (date) / / No State Superfund Status (date) 9 / 30 / 94

	S pathway	S ² pathway
Groundwater Migration Pathway Score (S _{gw})	*	
Surface Water Migration Pathway Score (S _{sw})	18.97	359.86
Soil Exposure Pathway Score (S _s)	*	
Air Migration Pathway Score (S _a)	*	
$S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX	359.86
$(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2) / 4$	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX	89.96
$\sqrt{(S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2) / 4}$	XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX	9.48

* Pathway evaluated, but not assigned a score (explain):

* GROUNDWATER PATHWAY WAS NOT SCORED BECAUSE THE NEAREST DRINKING WATER WELLS ARE
2-3 MILES UPGRADIENT OF THE SITE.* THE AIR MIGRATION AND SOIL EXPOSURE PATHWAYS WERE NOT SCORED AS
THERE ARE NO RESIDENCES, DAY CARES, OR SCHOOLS ON OR WITHIN
200 FEET OF THE SITE.

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET

Factor Categories and FactorsDRINKING WATER THREAT

	<u>Likelihood of Release to Aquifer</u>	<u>Maximum Value</u>	<u>Score</u>	<u>Rationale</u>	<u>Data Qual.</u>
1.	Observed Release	550	<u>550</u>	<u>1</u>	<u>H</u>
2.	Potential to Release				
2a.	Containment	10	<u> </u>	<u> </u>	<u> </u>
2b.	Net Precipitation	10	<u> </u>	<u> </u>	<u> </u>
2c.	Depth to Aquifer	5	<u> </u>	<u> </u>	<u> </u>
2d.	Travel Time	35	<u> </u>	<u> </u>	<u> </u>
2e.	Potential to Release [lines 2a x (2b+2c+2d)]	500	<u> </u>	<u> </u>	<u> </u>
3.	Likelihood of Release (Line 1 or 2e)	550	<u>550</u>	<u> </u>	<u> </u>
<u>Waste Characteristics</u>					
4.	Toxicity/Mobility/Persistence	a	<u>10,000</u>	<u>2</u>	<u>H</u>
5.	Hazardous Waste Quantity	a	<u>10</u>	<u>3</u>	<u>M</u>
6.	Waste Characteristics (lines 4 x 5, then assign a value from Table 2-7)	100	<u>18</u>	<u> </u>	<u> </u>
<u>Targets</u>					
7.	Nearest Intake	50	<u>0</u>	<u>4</u>	<u>H</u>
8.	Population ^d				
8a.	Level I Concentrations	b	<u>0</u>	<u>4</u>	<u>H</u>
8b.	Level II Concentrations	b	<u>0</u>	<u>4</u>	<u>H</u>
8c.	Potential Contamination	b	<u>0</u>	<u>4</u>	<u>H</u>
8d.	Population (lines 8a-8b-8c)	b	<u>0</u>	<u>4</u>	<u>H</u>
9.	Resources	5	<u>5</u>	<u>5</u>	<u>H</u>
10.	Targets (Lines 7+8d+9)	b	<u>5</u>	<u> </u>	<u> </u>
<u>Drinking Water Threat Score</u>					
11.	Drinking Water Threat [(Lines 3 x 6 x 10)/82,500 subject to a maximum of 100]	100	<u>0.6</u>	<u> </u>	<u> </u>

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET (CONTINUED)

Factor Categories and Factors**HUMAN FOOD CHAIN THREAT**

	<u>Likelihood of Release</u>	<u>Maximum Value</u>	<u>Score</u>	<u>Rationale</u>	<u>Data Qual.</u>
12.	Likelihood of Release (Same Value as Line 3)	550	<u>550</u>	<u>1</u>	<u>H</u>
	<u>Waste Characteristics</u>				
13.	Toxicity/Mobility/Persistence/ Bioaccumulation	a	<u>5.0×10^7</u>	<u>6</u>	<u>H</u>
14.	Hazardous Waste Quantity	a	<u>10</u>	<u>3</u>	<u>M</u>
15.	Waste Characteristics (Toxicity/Mobility/Persistence x Hazardous Waste Quantity x Bioaccumulation, then assign a value from Table 2-7)	1,000	<u>100</u>		
	<u>Targets</u>				
16.	Food Chain Individual	50	<u>20</u>	<u>7</u>	<u>H</u>
17.	Population ^d				
17a.	Level I Concentrations	b	<u>Ø</u>	<u>7</u>	<u>H</u>
17b.	Level II Concentrations	b	<u>Ø</u>	<u>7</u>	<u>H</u>
17c.	Potential Human Food Chain Contamination	b	<u>0.000372</u>	<u>8</u>	<u>H</u>
17d.	Population (Lines 17a+17b+17c)	b	<u>0.000372</u>		
18..	Targets (Lines 16+17d)	b	<u>20.000372</u>		
	<u>Human Food Chain Threat Score</u>				
19.	Human Food Chain Threat [(Lines 12 x 15 x 18)/82,500 subject to a maximum of 100]	100	<u>13.33</u>		

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET (CONTINUED)

Factor Categories and FactorsENVIRONMENTAL THREAT

	<u>Likelihood of Release</u>	<u>Maximum Value</u>	<u>Score</u>	<u>Rationale</u>	<u>Data Qual.</u>
20.	Likelihood of Release (Same Value as Line 3)	550	<u>550</u>	<u>1</u>	<u>H</u>
	<u>Waste Characteristics</u>				
21.	Ecosystem Toxicity/Mobility/ Persistence/Bioaccumulation	a	<u>5.0×10^6</u>	<u>9</u>	<u>H</u>
22.	Hazardous Waste Quantity	a	<u>10</u>	<u>3</u>	<u>M</u>
23.	Waste Characteristics (Eco. Tox./Mob./Pers. x Hazardous Waste Quantity x Bioaccumulation, then assign a value from Table 2-7)	1,000	<u>56</u>		
	<u>Targets</u>				
24.	Sensitive Environments ^d				
24a.	Level I Concentrations	b	<u>0</u>	<u>10</u>	<u>H</u>
24b.	Level II Concentrations	b	<u>0</u>	<u>10</u>	<u>H</u>
24c.	Potential Contamination	b	<u>13.5</u>	<u>11</u>	<u>H</u>
24d.	Sensitive Environments (lines 24a+24b+24c)	b	<u>13.5</u>		
25.	Targets (Value from line 24d)	b	<u>13.5</u>		
	<u>Environmental Threat Score</u>				
26.	Environmental Threat Score [(lines 20 x 23 x 25)/82,500 subject to a maximum of 60]	60	<u>5.04</u>		

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT SCORE FOR A WATERSHED

27.	Watershed Score [(Lines 11+19+26), subject to a maximum of 100]	100	<div style="border: 1px solid black; padding: 2px;">18.97</div> ^c
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GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT SCORE

28.	Component Score (Sof) (Highest score from Line 27 for all watersheds evaluated, subject to a maximum of 100)	100	<div style="border: 1px solid black; padding: 2px;">18.97</div> ^c
a	Maximum value applies to waste characteristics category.		
b	Maximum value not applicable.		
c	Do not round to the nearest integer.		
d	Use additional tables.		

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT CALCULATIONS (CONTINUED)

20. Food Chain Targets

Actual Contamination

Fishery	Contaminant	Concentration	Benchmark	(A) Assigned Population Value (Table 4-18)	(B) Level* Multiplier	(A x B)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
* <u>Level Multipliers</u>				Sum (A x B) Level I		_____
- Level I = 10				Sum (A x B) Level II		_____
- Level II = 1						_____

Potential Contamination

Fishery	Production (lb/yr)	(P) Assigned Population Value (Table 4-18)	Average Stream Flow at Fishery (cfs)	(DW) Dilution Weighting Factor (Table 4-13)	(DA) Dilution Weight Adjustment Factor (Table 4-27)	(PxDWxDA)
INSHORE	10,753	31	COASTAL TIDAL WATERS	0.0001	0.6	0.00186
OFFSHORE	74,413	31	SHALLOW OCEAN ZONE	0.0001	0.6	0.00186
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Sum (PxDWxDA)						0.00372

Fisheries Subject to Potential Contamination = $\frac{\text{Sum (PxDWxDA)}}{10} = \underline{0.000372}$

GROUNDWATER TO SURFACE WATER MIGRATION COMPONENT CALCULATIONS (CONTINUED)

27. Environmental Targets

Actual Contamination

Sensitive Environment or Wetland Length (miles)	Contaminant	Concentration	Benchmark	(A) Assigned Value (Table 4-23 and/or 4-24)	(B) Level* Multip.	(A x B)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
* Level Multipliers						
- Level I = 10				Sum (A x B) Level I		_____
- Level II = 1				Sum (A x B) Level II		_____

Potential Contamination

Sensitive Environment or Wetland Length (miles)	(A) Assigned Value (Table 4-23 and/or 4-24)	Average Stream Flow (cfs)	(DW) Dilution Weighting Factor (Table 4-13)	(DA) Dilution Weighting Adjustment Factor (Table 4-27)	(AxDWxDA)
HAWAIIAN OWL	75	_____	1	0.6	45
HAWAIIAN STILT	75	_____	1	0.6	45
HUMPBACK WHALE	75	_____	0.0001	0.6	0.0045
GREEN SEA TURTLE	75	_____	0.0001	0.6	0.0045
KEEHI LAGOON	50	_____	1	0.6	30
REEF RUNWAY	25	_____	1	0.6	15
Sum of (AxDWxDA)					135.009

Potential contamination = $\frac{\text{Sum (AxDWxDA)}}{10} = \underline{13.5}$

HAZARD RANKING SYSTEM (HRS) SCORING RATIONALES FLYNN-LEARNER PROPERTY

GROUNDWATER TO SURFACE WATER MIGRATION PATHWAY

1. **Observed Release:** Chemical analysis of the groundwater in the upper aquifer indicated levels of lead and cadmium above MCL's for those compounds. These were unfiltered samples, and when wells were developed and samples obtained, chemical analysis indicated levels below detection limits. Laboratory analysis of soil at the site indicates levels of lead, cadmium, and zinc down to 5 and 7 feet below ground surface (bgs) at concentrations greater than 3 times background. Ground water at the site fluctuates between 5 to 6 bgs, thus ground water is in contact with contaminated soil. A value of **550** is assigned.
2. **Toxicity/Mobility/Persistence:** The hazardous substances of significance on-site currently are lead, cadmium, and zinc. Their presence has been established through extensive soil sampling conducted on-site, as well as off-site to establish background levels for these substances. Lead on-site is up to 630 times background and cadmium is up to 270 times background levels.

Substance	Toxicity	Mobility	Persistence	T/M/P
Cadmium	10,000	1.0	1.0	10,000
Zinc	10	0.01	1.0	0.1
Lead	10,000	0.01	1.0	100

Values obtained from the Superfund Chemical Data Matrix (SCDM) dated June 1994. The greatest T/M/P value was calculated to be **10,000**.

3. **Hazardous Waste Quantity:** The known source on site is contaminated soil. No removal action has taken place, thus a default value of **10** is assigned.
4. **Nearest Intake:** There are no drinking water intakes along the ground water to surface water migration path, thus a value of **0** is assigned.
5. **Resources:** The surface water in the migration path of ground water is used as a recreation area (Keehi Lagoon Beach Park), thus a value of **5** is assigned.

6. Toxicity/Mobility/Persistence/Bioaccumulation

Substance	Toxicity	Mobility	Persist.	Bioacc.	T/M/P/B
Cadmium	10,000	1.0	1.0	5,000	5.0E + 7
Zinc	10	0.01	1.0	50,000	5,000
Lead	10,000	0.01	1.0	5,000	5.0E + 5

The T/M/P/B values were obtained from the Superfund Chemical Data Matrix dated June 1994. The highest T/M/P/B value is for cadmium and is 5.0×10^7 .

7. Food Chain Individual: Although there is an observed release to ground water the possibility of establishing a release to surface water (Keehi Lagoon) is unlikely because there are several facilities around the lagoon that could be alternate contaminators. Thus, not being able to establish Level I or II concentrations, and the hazardous substances present have a bioaccumulation potential factor greater than 500, a value of **20** is assigned.
8. Within the 15-mile in-water segment there are two fisheries, inshore and offshore, that were assigned as potential human food chain contamination (see scoresheet). A value of **0.000372** is assigned.

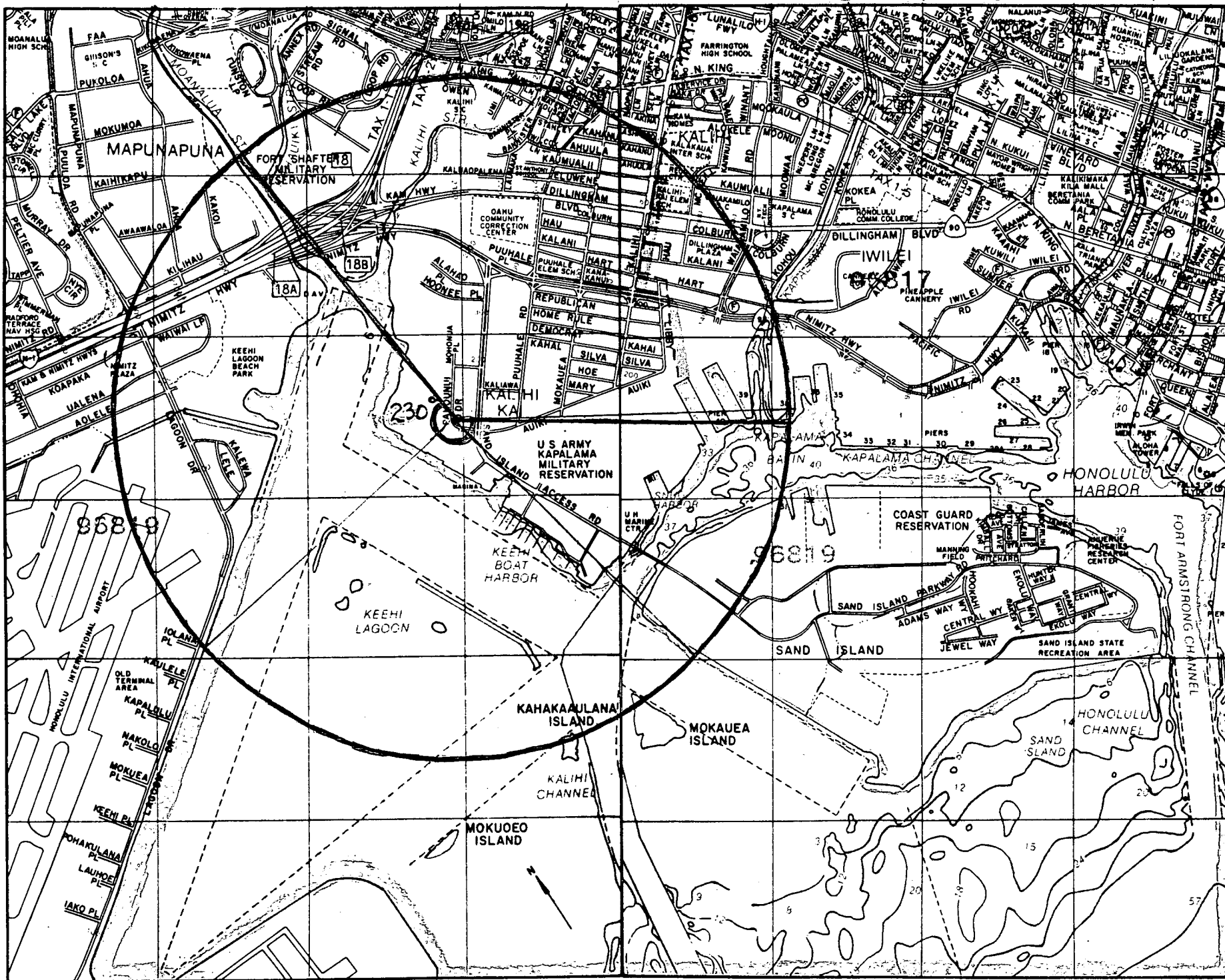
9. Ecosystem Toxicity/Mobility/Persistence/Bioaccumulation

Substance	Eco.Tox.	Mobility	Persist.	Bioaccum.	E/M/P/B
Cadmium	1,000	1.0	1.0	5,000	5.0E + 6
Zinc	100	0.01	1.0	50,000	5.0E + 4
Lead	1,000	0.01	1.0	5,000	5.0E + 4

The E/M/P/B values were obtained from the Superfund Chemical Data Matrix (SCDM) dated June 1994. The highest E/M/P/B value is for cadmium, thus a value of **5.0E + 6** is assigned.

10. Although an observed release to ground water, the possibility of establishing a release to surface water (Keehi Lagoon) is unlikely because there are several facilities around the lagoon that could be alternate contaminators. Thus, Level I or II concentrations are not established, nor projected for environmentally sensitive environments in the 15-mile in-water segment.
11. Keehi Lagoon and the Reef Runway are considered to be wetlands and are

habitats for both state and federal endangered species. The Pacific Ocean is also within the 15-mile in-water segment and is the habitat for the green sea turtle and humpback whale (federal endangered species). These areas were assigned potential contamination. A value of **13.5** was calculated (see scoresheet).



DETERMINATION OF GROUND WATER TO SURFACE WATER ANGLE